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### Is consideration of future consequences a changeable construct?

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## Is consideration of future consequences a changeable construct?

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### ABSTRACT

The consideration of future consequences (CFC) scale is designed to measure whether individuals consider the future implications of their current actions. The CFC Scale was administered in 11 waves to a heterogeneous panel, designed to be representative of the Dutch population aged 16 and over. To empirically validate the CFC Scale in a non-academic longitudinal setting, this paper examines internal consistency, stability, and underlying factors of the CFC construct. In addition, effects of personal characteristics, individual changes over time, and learning effects are taken into account. The CFC Scale is found to have an acceptable internal consistency. It is a changeable construct over the years, though it may remain stable over the course of a single year. Education has a significant effect on CFC. No evidence was found that re-interviewing affected responses to the CFC Scale.

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### 1. Introduction

The extent to which individuals consider the future implications of their current actions is commonly used to predict behavioral choices and life outcomes. For example, the consideration of future consequences is found to be related to saving behavior. People who are more concerned with future consequences save more money than people who are more concerned with their current well-being (see, e.g. Nyhus, Pons, & Webley, 2002; Nyhus & Webley, 2001; Webley & Nyhus, 2001, 2006).

Strathman, Gleicher, Boninger, and Edwards (1994) developed a construct called consideration of future consequences (CFC), which is hypothesized to be a stable individual difference in the extent to which people consider future versus immediate consequences of potential behavior. This CFC Scale was included in a longitudinal study on money-saving behavior of the Dutch population, called the DNB (Dutch Central Bank) Household Survey, which has been administered every year since 1993. This study includes detailed information on financial behavior in addition to items designed to tap various psychological concepts. See Nyhus (1996) for further information about the data collection methods and questionnaires. The CFC Scale was imbedded in a module on psychological variables explaining money-saving behavior, and was measured from 1996 to 2006. Due to budget cuts the question was raised whether the scale should be administered every year or could be administered

at a lower frequency. Although the construct is an important explanatory variable of behavior and is therefore used quite often in academic research, the extent to which CFC is a stable construct is relatively unknown. Most studies use independent cross sections and/or an academic setting to measure an individual's CFC.

This study uses 11 waves of the Dutch panel study to investigate whether the extent to which people consider distant versus immediate consequences of potential behavior is a changeable construct. To empirically validate the CFC Scale in a non-academic setting, the internal consistency, stability and underlying factors of the CFC construct are discussed. In addition, effects of personal characteristics, individual changes over time and learning effects are taken into account.

### 2. Background

The consideration of future consequences scale assumes that there are clear and reliable individual differences in the extent to which individuals are likely to consider future outcomes in choosing their present behavior. At one end of the continuum are individuals who believe that certain behaviors are worthwhile because of future benefits, even if immediate outcomes are relatively undesirable, or even if there are immediate costs. They are willing to sacrifice present well-being for future gains. At the other end of the continuum are individuals who are not interested in future consequences but more concerned with their present well-being (Strathman et al., 1994). For a summary of relevant concepts such as future time perspective and future orientation and the use of the

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construct, see Strathman et al. (1994). CFC is unique in that it does not measure a general preoccupation with the future or specific future events. CFC studies the extent of an intrapersonal struggle between present behavior and immediate and future outcomes. Whether individuals resolve this dilemma between present and future gains in favor of one or the other is hypothesized to be a relatively stable characteristic.

Psychological research has linked people's time perspective to many attitudes and behaviors including health behaviors (e.g. Piko, Luszczynska, Gibbons, & Tekozel, 2005), environmental behavior (Strathman et al., 1994), recreational activities (Shores & Scott, 2007), buyer–seller relationships (Schultz & Good, 2000), work motivation (Seijts, 1998), aggression (Joireman, Anderson, & Strathman, 2003), court disposition (Cauffman et al., 2007), and financial decision-making as in retirement planning (Howlett, Kees, & Kemp, 2008) and saving behavior (Nyhus & Webley, 2001). Consideration of future consequences is also used in explaining anticipated regrets or emotions (see e.g. Adams & Nettle, 2009; Moore & Dahlen, 2008; Morison, Cozzolino, & Orbell, 2010).

Strathman et al. (1994) demonstrated that the CFC Scale had acceptable reliability. Cronbach's  $\alpha$  ranged from .80 to .86 in four samples. Test–retest reliability showed correlations between .72 and .76. Convergent validity was demonstrated by providing empirical evidence for the unique relationship between the CFC Scale and other relevant individual-difference measures such as willingness to delay gratification and locus of control. CFC was also found to have important psychological consequences related to anticipated regrets and emotions. For example, subjects suffered more regret and blamed themselves more for a loss in athletics when they knew that the other athletes did not suffer the same side effects of taking drugs. This negative effect was ameliorated for high CFC subjects who thought about their next upcoming race. In all, CFC was demonstrated to be a unique contribution above other related measures.

Although CFC is used in a wide range of studies, the validation of the CFC Scale has received less empirical attention. Strathman et al. (1994) used principal factor analysis on their data to find factors underlying the consideration of future consequences. They found factor loadings from .30 to .72, and a one-factor solution which accounted for 94.6% of the variance. In his study on the validation of the CFC construct, Petrocelli (2003) closely examined the factor structure of CFC. He found an initial factor solution with two factors accounting for 44.7% of the variance. Factor 1 and Factor 2 were almost exclusively reserved for reverse-scored items and non-reverse-scored items, respectively, with the exception of Item 2 (see Petrocelli (2003, p. 410)). Little support was found for the stability of Factor 2, which attained poor internal consistency (Cronbach's  $\alpha = .48$ ).

As these results are somewhat inconsistent, further empirical validation of the CFC Scale is warranted. Petrocelli (2003) argues that there are two underlying factors of the original 12-item version of CFC instead of one factor, and proposes an eight-item version to measure a single factor solution. Apparently, there might be more than one factor reflected in the CFC Scale. An important limitation of the research on CFC involves the academic setting of the samples used. A non-academic setting on a heterogeneous sample is warranted to check the consistency of the scale as well as longitudinal and personal influences (Petrocelli, 2003).

Strathman et al. (1994) note that although CFC is hypothesized to be a stable individual difference, individuals might experience events that influence the extent to which they consider future consequences. For instance, individuals who experience a dramatic increase in socioeconomic status may become more prone to thinking ahead, rather than being solely concerned with immediate outcomes. Changing from student to working status

or becoming a parent might also influence consideration of future consequences. Zimbardo and Boyd (1999) state that time perspective variations are learned and modified by a variety of personal, social, and institutional influences. Some studies argue that time perspective is formed during childhood. Mischel, Shoda, and Rodriguez (1992) argue that an early family environment in which delay of gratification is encouraged nurtures consideration of future consequences and facilitates social and cognitive skills in later life. Webley and Nyhus (2006) demonstrate that the future orientation (and conscientiousness) of parents is correlated with that of their children. Bernheim, Garrett, and Maki (2001) suggest that education plays an important role. Subjects who had taken decision-making courses in high school showed different time perspective attitudes than subjects that did not follow these courses. Time perspective variations function as an individual-differences variable, but the extent to which time perspective varies is unknown. This paper compares 11 waves of the CFC Scale to investigate the stability of the scale and individual changes over time in order to shed some light on the changeability of the CFC construct.

### 3. Method

The study made use of the CentERpanel, a web-based household panel established in 1991 consisting of more than 2000 households. This panel was administered by CentERdata (Tilburg University, The Netherlands). The panel aimed to be representative of the Dutch-speaking population in the Netherlands aged 16 and over. Although it was a web-based panel, there was no need to have a personal computer with an Internet connection. Those households that did not have access to Internet when recruited were provided with a so-called Net.Box, which could be used to establish a connection via a telephone line and a television set. If the household did not have a television, CentERdata provided that as well. Demographic information about the samples used is presented in Appendix A.

The CFC Scale was included in the DNB Household Survey, a longitudinal study on money-saving behavior of the Dutch population which has been administered every year since 1993. Table 1 shows the number of respondents for the waves 1996–2006. Due to unknown reasons, from 1996 to 2003 only 11-items were measured (instead of the original 12-item version of the CFC Scale). The twelfth item was added to the questionnaire from 2004. The questions and answer format are presented in Appendix B. Instead of the five-point scale of the original version, a seven-point scale was used. Other concepts were measured on a seven-point scale in the questionnaire. To avoid respondents' confusion, it was decided to measure all concepts in the questionnaire with the same number of scale points.

### 4. Results

This section discusses internal consistency, stability, and underlying factors of the CFC construct. In addition, the effects of personal characteristics, individual changes over time and learning effects are considered.

#### 4.1. Internal consistency

Over 11 years, the mean score on the CFC Scale varied between 42.1 and 45.8 (based on 11-items, see Table 1). This is similar to the results of Strathman et al. (1994) and Petrocelli (2003). Cronbach's  $\alpha$  ranged from .72 to .77. This is somewhat lower than the  $\alpha$ 's ranging from .80 to .86 computed by Strathman et al. (1994) and .82

**Table 1**

Descriptive and reliability analysis from the 11 waves of the consideration of future consequences scale.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>N</i>	3314	2594	1345	1337	1338	2091	1973	1678	2083	2191	2034
<i>M</i>	43.9	43.3	42.9	42.1	42.7	44.0	42.3	42.5	45.8	45.5	45.3
<i>SD</i>	11.4	11.1	10.8	11.0	9.6	9.0	9.7	10.3	8.1	8.3	8.1
Cronbach's $\alpha$	.76	.75	.77	.76	.74	.73	.72	.76	.72	.72	.73
Item-total correlation range	.15–.54	.14–.56	.15–.58	.11–.61	.06–.60	.01–.56	.06–.56	.04–.58	.02–.60	.04–.61	.05–.58

Note: In contrast to the original version of Strathman et al. (1994), CFC is measured on a seven-point scale. For unknown reasons, the twelfth item is not taken into account in waves 1996–2003. The analysis is therefore based on 11-items. All item-total correlations were positive.

computed by Petrocelli (2003). Zimbardo, Keough, and Boyd (1997) found an  $\alpha$  of .78.

Our lower  $\alpha$ 's are due to the fact that the twelfth item was not included, leaving just 11-items. The twelfth item was added to the questionnaire in waves 2004, 2005 and 2006. When Cronbach's  $\alpha$  was computed for these three waves including the twelfth item, it augmented to .74 in 2004, .75 in 2005, and .76 in 2006. In addition to the omission of the twelfth item, the sample used could also explain the lower  $\alpha$ 's. A representative (heterogeneous) sample was used in the current study, whereas Strathman et al. (1994) and Petrocelli (2003) used a student (homogeneous) sample. Education correlated significantly with the CFC score ( $r = .173$ ,  $n = 2034$ ,  $p < .01$  in 2006). Including only respondents with university education resulted in a Cronbach's  $\alpha$  of .78 for the 11-item version, in 2006. When the twelfth item was added to the analysis, Cronbach's  $\alpha$  increased for this subpopulation to .80. This approximated the  $\alpha$  range from Strathman et al. (1994) and Petrocelli (2003). Therefore, both the twelfth item and the sample were responsible for the somewhat lower  $\alpha$ 's in our data, compared to Strathman et al. (1994) and Petrocelli (2003).

In this study, wider item-total correlation ranges were found than Strathman et al. (1994) did. Their range varied between .26 and .71, while the item-total correlation range in this study varied between .06 and .61. The fifth item ("My convenience is a big factor in the decisions I make or the actions I take.") had a very low item-total correlation.

#### 4.2. Stability

To examine the stability of the CFC Scale over time, test–retest reliability was computed, as Strathman et al. (1994) did previously. Correlations were computed between each wave, as can be seen in Table 2.

Again, correlations were somewhat smaller than the results of Strathman et al. (1994), which were .76 and .72. The omission of the twelfth item and the heterogeneous sample were explanations for the lower correlations in our study. When the twelfth item was

included in waves 2004–2006, correlations augmented to .63 for waves 2004/2005, .63 for waves 2004/2006 and .60 for waves 2005/2006. Using a subpopulation of respondents with university education also resulted in higher correlations (.67 for waves 2004/2005, .75 for waves 2004/2006 and .62 for waves 2005/2006). The remaining difference could be due to the fact that Strathman et al. used a two and five week interval between waves, while this interval was one year. The correlations in Table 2 provide evidence of the temporal stability of the CFC Scale.

#### 4.3. Factor analysis

Petrocelli's (2003) analysis was replicated by using a Varimax-rotated two-factor solution for the 11-items used. The factor analysis was conducted on each wave separately. As can be seen in Table 3, in all 11 waves the results of Petrocelli (2003) were confirmed. The reverse-coded items were reserved for Factor 1 and the non-reverse-coded items for Factor 2. In contrast to Petrocelli (2003), also the non-reverse worded Item 2 was reserved for the non-reverse worded Factor 2. Each of the positively worded items deals with intentional and active efforts to consider future consequences, while the reverse-scored items deal with intentional and active efforts to concern one with immediate outcomes. Although Factor 1 explained more of the variances than Factor 2 (ranges between 29–31% for Factor 1 and 13–19% for Factor 2), there was no evidence that Factor 2 had a poor internal consistency. Cronbach's  $\alpha$  ranged from .54 to .74 for Factor 2 and from .68 to .76 for Factor 1. In the last three waves the twelfth item of the scale was included. This twelfth item had high loadings on both factors, and therefore did not discriminate between factors. This might be a reason why it was omitted in the first place, although this is only speculation.

#### 4.4. Individual changes over time

People may change in their consideration of future consequences. Strathman et al. (1994) believe that although the individ-

**Table 2**

Correlation between waves of the consideration of future consequences scale.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1996		.58	.61	.55	.49	.50	.49	.55	.48	.45	.44
1997			.62	.58	.48	.49	.51	.47	.48	.49	.46
1998				.63	.54	.57	.57	.50	.53	.54	.46
1999					.59	.59	.60	.61	.57	.52	.57
2000						.55	.54	.57	.50	.49	.50
2001							.58	.59	.61	.58	.60
2002								.59	.54	.49	.53
2003									.58	.52	.53
2004										.62	.63
2005											.59

For all correlations  $p < .01$ .

Note: Test–retest reliability was computed on 11-items.



**Table 3**

Principal factor analysis of the consideration of future consequences scale.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>Factor 1</i>											
% Variance	31	30	31	30	30	30	29	32	29	29	30
Cronbach's $\alpha$	.76	.75	.74	.75	.68	.74	.71	.73	.70	.71	.70
<i>Factor loadings</i>											
Item 3a	.68	.67	.67	.71	.70	.68	.68	.67	.66	.66	.65
Item 4a	.63	.63	.66	.66	.72	.60	.51	.59	.55	.56	.55
Item 5a	.54	.51	.54	.48	.53	n.s.	.48	.47	.43	.47	.50
Item 9a	.65	.65	.58	.65	.59	.68	.65	.68	.65	.68	.63
Item 10a	.70	.71	.70	.68	.55	.68	.67	.73	.70	.70	.69
Item 11a	.76	.78	.73	.77	.68	.77	.76	.75	.78	.74	.76
<i>Factor 2</i>											
% Variance	17	17	15	18	13	17	17	17	17	19	18
Cronbach's $\alpha$	.73	.73	.70	.74	.67	.72	.59	.61	.54	.60	.62
<i>Factor loadings</i>											
Item 1	.73	.73	.71	.70	.62	.71	.70	.70	.74	.73	.73
Item 2	.74	.71	.67	.74	.55	.73	.70	.68	.72	.73	.73
Item 5a	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	-.42	-.46	n.s.	-.41
Item 6	.58	.61	.53	.60	.49	.58	.55	.58	.52	.58	.58
Item 7	.64	.64	.65	.65	.44	.60	.62	.66	.52	.63	.64
Item 8	.70	.69	.68	.70	.58	.69	.71	.69	.62	.68	.69
Item 10a	n.s.	n.s.	n.s.	n.s.	.45	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

a = Reverse-scored item; n.s. = factor loading smaller than .40.

Factor loadings with a minimum of .40 for Varimax-rotated two-factor solution are presented, as used in Petrocelli (2003). Item 1, 2, 6, 7, and 8 had no significant factor loadings on Factor 1, while item 3, 4, 9, and 11 had no significant factor loadings on Factor 2.

**Table 4**

F-values GLM repeated measures of the 11 waves of the consideration of future consequences scale.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1996		3.0	6.3*	17.2**	4.9*	4.8*	23.6**	23.8**	5.5*	.5	1.9
1997			.3	12.0**	12.7**	1.8	25.4**	22.5**	6.7**	5.9*	5.8*
1998				17.5**	7.2**	1.3	26.1**	23.7**	7.9**	7.1**	8.8**
1999					.8	3.0	14.2**	9.2**	29.9**	24.5**	16.6**
2000						3.2	11.1**	6.7**	43.5**	31.8**	29.3**
2001							63.0**	43.3**	49.3*	18.4**	13.9**
2002								.01	162.9**	91.1**	87.2**
2003									173.4**	87.3**	94.4**
2004										9.5**	11.0**
2005											.5

\*  $p < .05$ .\*\*  $p < .01$ .

ual difference is relatively stable over time, individuals might experience events that influence the extent to which they consider future consequences. GLM Repeated Measures were used to analyze whether individuals show differences in their score on the CFC Scale. First, GLM was conducted on all 11 waves. Respondents had significantly different answers over time ( $F(10, 1260) = 6.3$ ,  $p < .01$ ). Because only 127 respondents completed all 11 questionnaires, this might not be a representative group for the whole population. Therefore, GLM was conducted on all pairs of waves. See Table 4 for the results.

Most pairs of waves showed statistically significant different CFC scores, indicating that respondents change in their consideration of future consequences. In subsequent waves, six out of ten pairs did not show significantly different answer scores. This indicates that consideration of future consequences is a changeable construct, though it may remain stable over the course of a year. People might experience events that change their concern with future consequences, for example a change in working status or becoming a parent. Unfortunately, the number of observations in this study was too low to study the effects of these events. Future research should address the factors that contribute to the ways in which individuals become more or less concerned with their future outcomes.

#### 4.5. Effects of personal characteristics

Petrocelli (2003) found that men scored significantly lower than women on the CFC Scale. Zimbardo et al. (1997) found no differences between men and women. These studies used students as a sample, making it impossible to look at the effect of education. Since the present study used a representative (heterogeneous) sample, it was possible to look at effects of gender, education, age and income on the CFC score. Multiple linear regression analysis for the 2006-wave showed a significant effect of education ( $t = 7.1$ ,  $df = 2027$ ,  $p < .0001$ ), but not of the other three variables. In fact, gender, age and income did have a significant effect in a univariate analysis, but in a joint analysis their effects on CFC became insignificant.

#### 4.6. Panel conditioning

As respondents may learn from taking surveys, and may change their attitudes or behavior because of re-interviewing, repeating questions 11 years in a row might cause differences in responses. To test for panel conditioning, ANOVA was done on the 2006-wave, with the score on CFC as a dependent variable,

and the number of previous waves attended (varying between 0 and 10) as an independent variable. No differences were found between groups ( $F(10, 2023) = .698$ ,  $p = .73$ ), indicating that responses were not affected by re-interviewing.

## 5. Discussion and conclusions

The goal of the present study was to establish further empirical validation for the CFC Scale. Previous research on the CFC Scale was based on academic cross-sectional settings and homogeneous samples. Therefore, a heterogeneous sample using a non-academic and longitudinal setting was warranted to check the consistency of the scale as well as personal influences. In addition, it was relatively unknown whether CFC is a changeable construct. Existing literature did not show whether CFC changes within individuals over time and if so, what variables are causing these changes. Since CFC is used in a wide range of studies, it is important to further validate the construct.

This study confirmed the internal consistency and stability of the CFC Scale in a non-academic and longitudinal setting. Petrocelli (2003) states that the inconsistent results for the underlying factors of CFC show a poor internal consistency. This study revealed that the CFC was internally very consistent over time when used on the same individuals (in a panel), implying that the kind of sample used might be a better indicator of the consistency than the measure itself. The results of Petrocelli (2003) were confirmed in that the CFC Scale had more than one underlying factor. Future research could profitably focus on examining the underlying factors of CFC to find the cause of the inconsistent results between studies in this respect. The analysis of 11 waves showed that the consideration of future consequences scale was a changeable construct, but it could remain stable over the course of a year. The events that cause differences in CFC have yet to be identified. Unfortunately, there were too few observations to determine the causes of these differences. Future research should be conducted to understand what causes differences in CFC. Changes in working status, becoming a parent, or other drastic events in a person's life could be analyzed in order to shed some light on the changeability of the construct. The results showed an effect of education on CFC, while repeated interviewing (panel conditioning) had no effect on the answers respondents provided on the CFC Scale.

## Appendix B. Consideration of future consequences scale

The consideration of future consequences scale (Strathman et al., 1994) is a scale designed to measure the extent to which individuals consider the future implications of their current behavior. The list of 12-items is presented below. For unknown reasons, the twelfth item was not administered in wave 1996–2003. The questions were answered on a seven-point scale.

1. I consider how things might be in the future, and try to influence those things with my day to day behavior.
2. Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.
3. I only act to satisfy immediate concerns, figuring the future will take care of itself.
4. My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.
5. My convenience is a big factor in the decisions I make or the actions I take.
6. I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.
7. I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.
8. I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.
9. I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.
10. I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.
11. I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.
12. Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.

Answer format:

Extremely uncharacteristic							Extremely characteristic
1	2	3	4	5	6	7	

## Appendix A

Composition of the samples.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>Gender (%)</i>											
Male	56	56	57	59	57	54	54	55	54	52	52
<i>Age (M)</i>	46	47	48	49	46	46	47	49	50	48	49
<i>Education (%)</i>											
Primary education	9	8	7	6	9	8	4	4	4	6	5
Pre-vocational education	27	28	25	26	26	23	23	25	27	26	27
Pre-university education	12	12	13	12	12	12	14	13	12	14	13
Senior vocational training	14	17	19	19	19	20	22	20	20	20	20
Vocational colleges	24	22	21	22	27	28	26	25	25	23	25
University education	11	8	8	9	7	9	11	12	12	10	10
<i>Employment (%)</i>											
Employed	49	47	44	47	55	60	55	56	54	49	48
N	3314	2594	1345	1337	1338	2091	1973	1678	2083	2191	2034

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